

BLOCKCHAIN AND NFT MUSIC: REDEFINING ECONOMIC EMPOWERMENT AND MONETIZATION IN THE DIGITAL MUSIC ERA

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ABSTRACT

Within the context of the music industry, this study investigates the ways in which blockchain technology and Non-Fungible Tokens (NFTs) are bringing about new forms of ownership, commercialization, and artist empowerment. These changes are causing the creative and economic environment to undergo significant transformations. The research used a mixed-method approach that included problem-centered expert interviews in addition to a large literature analysis. This methodology allowed for the integration of theoretical concepts with real-world experiences from artists, legal experts, and blockchain professionals. Through the elimination of intermediaries and the promotion of direct connections between fans and artists, the findings indicate that blockchain technology has the potential to enhance the autonomy of artists and the profit margins enjoyed by them. The immutability, transparency, and decentralization of the system are the reasons behind this. A lack of consumer interest, uncertain copyright ownership regulations, and the absence of metadata and royalty distribution standards (ERC standards) are all significant barriers that stand in the way of broad adoption. When it comes to determining the monetary value of music non-fungible tokens (NFTs), a number of research studies indicate that the production cost, copyright originality, social value, and market dynamics are all important factors to consider. Even if there are worries about volatility and a lack of regulation, music non-fungible tokens (NFTs) are a game-changing technology that has the potential to disrupt the digital music business by redefining the development and distribution of quality content. According to the paper, in order for non-fungible tokens (NFTs) to become a permanent component of the music industry, there must be a coordinated effort to modify the laws, standardize technology, and educate the market. This is necessary to ensure that everyone can gain economically, and there should be no mystery about how they generate money.

Keywords: Blockchain Technology, Non-Fungible Tokens (NFTs), Music Industry, Digital Monetization, Economic Empowerment, Smart Contracts

INTRODUCTION

A digital asset that has certain monetary features is referred to as a non-fungible token, or NFT for short. NFT has generated ground-breaking transformations in a multitude of sectors, including the worldwide art, music, film, gaming prop, and real estate markets. These disruptions have been triggered by the non-homogeneity, indivisibility, transparency, and traceability of NFT. It cleared the path for a new use case for blockchain technology outside of the financial sector, which is the exchange of non-fungible token digital content works, and it represented a big step forward for the cultural digital publishing industry that is powered by blockchain technology. In spite of the fact that it has gained a lot of attention from the publishing industry, the cultural and creative industries, and the domain of digital content, there is still no agreement on what NFT is or how it operates due to the fact that it has not yet been fully understood. When seen via a physical lens, non-fungible tokens (NFTs) are shown to be, at their core, data units that are composed of code. When looking at NFT from a technical point of view, it is evident that its major function is to preserve the metadata of a specific digital asset as well as the history of information on the transfer of ownership of that asset (Wang et al., 2021). NFT takes on the qualities of a sign of ownership and brings with it the weight of official proof of asset attribution (Kastrenakes, 2021). This is significant from a business perspective since it bears the weight of official evidence.

A significant simplification of the commercialization and interoperability of digital and physical commodities is achieved via the use of non-fungible tokens (NFTs) in the publishing sector of digital material (Idelberger & Mezei, 2022). This, in turn, leads to an improvement in the efficiency of copyright registration, transaction transparency, and asset liquidity (Bamakan et al., 2022). Digital content and cultural creative industries have been launched into a new age of growth for the digital economy as a result of the cultural digitization strategy. The NFT digital content works trading market has ushered in unparalleled wealth. On the other hand, issues and concerns about speculation, money laundering, and criminal funding have surfaced concurrently with this spectacular development (Wang et al., 2021). The following problems in determining the value of NFT are mostly responsible for this situation: (1) It possesses the diverse qualities of both art consumption and asset investment, and maintaining a balance between the two can be challenging; (2) It is heavily influenced by commercial forces, and the meaning of value is complex; (3) The market is multi-tiered, with a lengthy life cycle and numerous factors impacting value; (4) The market is still in its early stages, lacking a mature pricing system and standards for evaluating value.

In contrast to traditional digital publishing, non-fungible tokens (NFT) make advantage of the consensus mechanism of blockchain technology and the programmability of smart contracts to boost the value of digital content in a variety of ways, including the following: It is a direct reflection of the rarity of digital content because the ability of NFT technology to prevent the dilution of ownership due to data duplication is a direct reflection of the rarity of digital content, which in turn improves the value of NFT digital content works (Guadamuz, 2021 ; Frye, 2021). Some scholars, such as Frye (2021), are skeptical; she contends that the absence of discussion of scarcity is due to the fact that non-fungible token digital content works have not yet escaped the restrictions of transparency and reproducibility.

In the actual world, several non-fungible tokens (NFTs) based on the same asset are generated, (Chohan, 2021). This "artificial scarcity" can only be established in a market where token scarcity is generally accepted (Chevet, 2018). Traceability, which is considered in this context to refer to the creator's ability to get copyright compensation in a consistent manner, is the source of value for non-functional digital content works that are sold on the secondary market (Piyadigama & Poravi, 2022). Buyers and investors believe that there are two different reasons why non-fungible tokens (NFTs) are appealing. consumers stand to gain from the rising rarity of works, which may result in higher prices when they resale them in the future (Raizberg, 2023) . On the other hand, consumers stand to profit from the increasing rarity of works. NFT, on the other hand, has the potential to transform the contributions made by core fans into genuine economic value, which further stimulates their consumption. When it comes to determining the value of non-fungible tokens (NFTs), the safety of the block ecosystem is an essential factor (Taherdoost, 2022) . In spite of the fact that the influence of volatility transmission between the cryptocurrency and NFT markets is very minor, the research conducted by Dowling (2022) demonstrates that the two markets do, in fact, move in tandem, particularly as a result of cryptocurrencies. This occurs due to the fact that the former was the source of the latter (Dowling, 2022). Additionally, the pricing of non-financial instruments (NFTs) is significantly influenced by public attitude, regulatory laws, and macroeconomic conditions.

For instance, when interest rates are low and there is a high demand for alternative investments, the prices of NFTs will surge (Kong & Lin, 2021). A significant portion of the study that has been done up until now only takes into consideration NFTs from a single perspective, and there has not been a comprehensive and objective investigation of the usefulness of NFTs from a systematic aspect. Additionally, the property value, which is essential to the operation of NFT digital content works, has not been taken into consideration in an acceptable manner according to these researchs. Therefore, the value chain theory serves as the basis for this study, and it offers a novel description of the essential concepts and components that comprise the value chain of non-fungible token digital content. By conducting a systematic analysis of the many factors that influence the value of NFT digital content works, we construct a preliminary value evaluation index system. This is based on the information presented above. In the next step, we used web crawling technology to obtain data on NFT digital work trading from OpenSea, which is a typical software platform. For the purpose of conducting an empirical test of the scientific and efficient character of the indicator system, we selected common value assessment models from the fields of statistics, machine learning, and deep learning.

The Value Chain Model of NFT

The value chain theory developed by Michael Porter in 1997 divides the activities involved in production and operation into two primary categories: basic and auxiliary production. The value chain model of NFT digital content works is constructed by this study on the basis of this theoretical framework, together with the process of minting and circulation of NFT (Figure 1). Through an in-depth examination of the NFT's connections and components from the perspective of the value flow and activity composition dimensions, the model offers a powerful analytical instrument that can be used for the purpose of comprehending the functioning mechanism of the NFT market.

	Path	Value Formation		Value Realization and Appreciation
Value Layer	Subject	User (Institution or Individual)	Platform and User	Platform and Consumer
	Factor	Cost	Copyright	Market
Activity Layer	Specific Activities	Content Creation • PGC • UGC	Obtain copyright NFT Minting works protection	Trading Transfer Continuous Holding
	Process	Design	Production	Operation

Figure 1. The NFT Digital Content Work Value Chain Model

The value layer of the NFT digital art value chain model comes from the contributions of a number of different entities and the interaction processes between them. The process of designing and minting digital content is the point at which organizations or individual creators achieve the first stage of value generation. Through the supply of a suite of ancillary services and the execution of a long-term business plan, the trading platform, in its capacity as an intermediary, is able to increase its value. Not only do consumers and platforms, which act as substitutes for value producers, make it easier for the quick transfer of labor value via channels such as purchases and gifts, but they also generate a dynamic cycle of value realization and appreciation in the secondary market. Each of the three stages that comprise the activity layer in the process of developing and maintaining digital content for NFT websites has its own set of core value influencing factors that are distinct from the others.

At the beginning of the process, which is referred to as "content design," the primary focus is on the creation and generation of digital works, with price playing a crucial part in determining the worth of the product. After that comes the next phase, which is buying works. As a result of the fact that copyright content is becoming an increasingly significant component of value at this stage, ensuring that it is both legal and distinctive is quite vital. Specifically, this pertains to the acquisition of copyrights and their minting on blockchain. During the last stage, which is referred to as operation, the work is maintained in a continuous condition and is exposed to market activities such as selling and gifting. At this point in time, the most significant factors that have been responsible for establishing the value of works are market forces, which include demand, price fluctuations, and trading activity.

OBJECTIVES

- To investigate how decentralized monetization models using blockchain and NFT technology may revolutionize the financial and artistic empowerment of musicians.
- To examine the commercial, technical, and regulatory issues affecting the uptake and viability of Music NFTs in the international digital music sector.

RESEARCH METHODOLOGY

The foundation for this examination of non-fungible tokens (NFTs) in the music industry was laid by literature evaluations on blockchain technology, music NFTs, and the structures of the industry. According to Meuser and Nagel (2009), we were able to corroborate our knowledge by conducting problem-centered expert interviews. These interviews were based on the theoretical considerations that we had developed. This series of interviews was carried out with the purpose of bridging the gap between theoretical knowledge and practical experience gained in the classroom. There were a great number of specialists from the NFT ecosystem that were approached, including experts from the music industry, blockchain experts, lawyers, NFT artists, and researchers from the music business. By using this strategy, it was feasible to do a cross-validation of theoretical conclusions with industry insights as well as an assessment of the actual implementation of the concepts. Through the use of insights gleaned from literature and interviews with subject matter experts, this research comprehensively addresses both theoretical and practical aspects. In order to do the analysis, we first recorded the one-on-one interviews that we did using Zoom with the participants' agreement, and then we transcribed the interviews. For the purpose of this inquiry, the following experts were used as consultants:

- Knowledgeable about Blockchain Technology and Legal Aspects: Providing information on the tax and legal implications of blockchain and music NFTs. (NS)
- Legal Expert with an Emphasis on Copyright Law: Offering a legal viewpoint on how Music NFTs are used within the larger legal context. (PK)
- Music NFTs Specialist: Offering knowledge on how to successfully start projects and use Music NFTs in practice. (FS)
- Expert in Music Rights and Investments: Providing a distinct perspective on the relationship between music rights, investments, and the function of music NFTs. (CS)
- Blockchain Technology Specialist: Providing insights on transaction registers and smart contract development, with a focus on Ethereum and other blockchain technologies. (JD)
- Music Industry Professional: Contributing an industry perspective on project management, artist signing tactics, and the incorporation of emerging technology. (NN)
- Scholar with Music Economy Experience: Offering a scholarly viewpoint on the financial implications of music and the influence of new technology. (PT)

RESULT

In the next chapter, we will approach the topic of non-financial transactions (NFTs) in the business sector from a more comprehensive standpoint. Issues pertaining to market acceptance and security risks, the significance of ERC standards and the difficulties they present, the complexities of direct artist-fan relationships in a decentralized environment, the ever-changing landscape of music non-fungible tokens, and the overall potential and benefits of blockchain technology in the music industry are the six primary topics that are discussed. This comprehensive investigation of Music NFTs brings together the perspectives of industry professionals, practical insights, and the findings of an in-depth literature review. The purpose of this examination is to provide a deeper understanding of the current state of Music NFTs as well as their promise for the future.

Blockchain's Potential and Benefits for the Music Industry

The findings of the study indicate that blockchain technology seems to have a great deal of promise in the music industry. It was pointed out by specialists JD and CS that it could eliminate the need for intermediaries, make things more transparent and immutable, expedite distribution, and create one-of-a-kind value-added services such as individualized fan experiences (PwC, 2018). In his presentation, FS emphasized the possibilities for new creative channels, going outside traditional music outlets, and developing new partnerships with listeners. Previous study implies that blockchain technology may help pave the way for new methods to support music by allowing for direct license trading. This may lead to a move towards more genuine transfers of value in the music business. This finding is in line with the findings of that research.

The technological and legal framework challenges.

One of the most significant obstacles that music NFTs face is the regulatory environment. In keeping with earlier research that has thrown doubt on the certainty of digital work ownership and use rights, NS, PK, and NN raised attention to the ambiguity in the law of NFTs. This is in line with the findings of Kaulartz and Schmid (2021). When attempting to negotiate the Music NFT market in a responsible manner, one of the most crucial things to bear in mind is the complexity of music copyright law and the need for in-depth legal expertise. This is supported by McLellan and Leung (2022), who put out the argument that these interactions need to be appropriately characterized via the use of contractual foundations. Security Threats and the Acceptance of the Market

During the course of the investigation, one of the most significant issues that was discovered was market acceptance. CS drew attention to the fact that the Music NFT business has seen significant losses and a decline in market confidence as a consequence of several cases of fraud and the crisis involving bitcoin (Hauck, 2022; Smith, 2023;). Because of the uncertainty that surrounds non-fungible tokens (NFTs), artists are choosing to refer to their works that are based on NFTs as "digital collectibles" or "music shares" in order to escape the negative connotations that are associated with NFTs.

Decentralization of the Music Industry and Enhancement of ERC Standards

The lack of adequate ERC standards for music NFTs, according to the perspectives of FS, is a barrier to the accurate integration of information and the automatic distribution of royalties. CS, on the other hand, expressed skepticism on the essential need of artificial intelligence, saying that the decentralization idea that the music business is pursuing would make AI less significant. A number of authors in the academic literature, including Hu et al. (2021) and Botero et al. (2022), have brought attention to the significance of music file metadata standards for efficient administration and monetization.

Relationships between fans and artists that are direct are a complex web of interactions. In spite of the fact that it is a positive development, the elimination of intermediaries makes it more difficult for aspiring artists to communicate with their audience. The challenges that independent artists face when it comes to acquiring market awareness and promoting themselves were brought to light by PT. In order to ensure that artists are able to retain a greater portion of the money they earn, we need to give serious consideration to the concept of non-profit organizations (NFT) platforms that provide solutions for artist promotion, but at a cost.

"Music NFTs: A Scene That Is Changing"

Music NFTs have the potential to bring about significant benefits for the music industry, despite the challenges that they present. According to the findings of the study, in order for music non-fungible tokens (NFTs) to achieve widespread adoption and success, there must be comprehensive market education, legal and technological maturity, and the development of standards that are tailored to the unique requirements of the music business.

Prospects & Opportunities for the next time period

The power of music non-profit organizations (NFTs) to change artist engagement and produce new kinds of revenue is something that cannot be denied, despite the fact that there are certain hurdles. The capacity to get licenses and make money from secondary sales is one of the reasons why PwC (2018) and other experts believe that musicians have a prosperous future ahead of them. In

spite of this, the process of addressing the issues of public acceptability, technical feasibility, and legality is a complex one that must be navigated in order to arrive at complete and equitable compensation. According to the findings of the investigation into the several aspects of music NFTs in the industry, it is evident that there is a great deal of potential, but there is also a great deal of challenges. Before the full potential of music non-fungible tokens (NFTs) can be used, there are a number of difficult measures that need to be completed. In the next section, we will transfer our attention to future research and describe the areas in which our present knowledge is lacking, as well as the prospective pathways for further research into the ways in which music NFTs will evolve and influence the music industry.

Factors Influencing the Value of NFT

In order to get a more in-depth understanding of the factors that contribute, we examine the model of the NFT digital content value chain from three distinct perspectives: the cost composition, the copyright content, and the market demand.

Cost Composition: NFT owns digital material as an intangible asset. The "Cost Method" is the usual approach for calculating the value of traditional intangible assets, and it shows that cost components are crucial. The paper divides NFT digital material generation expenses into direct and indirect costs. From ideation to product completion, the direct cost includes manufacturing and technical execution. Indirect costs are disposable expenses after a product is released. Indirect expenses include marketing and transaction fees. NFT, an intelligence-heavy product, depends on creativity, culture, and knowledge in its creation. These parts are crucial. Physical assets including imagery, music, animation, and IP must be purchased throughout this process. For development, the Nifty Gateway NFT trading platform artist team or platform will pay a set sum for intellectual property (IP). They may also pay a proportion of investment expenditures to develop with IP holders. The money spent on blockchain platform transaction fees, smart contract creation and deployment fees, and digitization and storage costs goes toward technology implementation, which transforms creative content into non-fungible tokens. Marketing and transaction fees promote and sell NFT works. These fees dominate indirect expenses. Marketing attracts new consumers and promotes NFT. Marketing techniques including advertising, community development, and maintenance fees achieve this. Each transaction's NFT Transaction Services platform costs are called "transaction expenditures". OpenSea and Rarible charge 2.5% each transaction, while SuperRare charges 3%.

Copyright Content: Non-fungible tokens (NFTs) are a new kind of digital publishing, hence copyright is inherent. The copyright of digital works is automatically guaranteed when they are minted as blockchain-based NFTs (Lynn, 1991). This research classifies non-fiction material copyright value by freshness, timeliness, authority, and richness. Literature analysis informs this categorization. Originality refers to the creative content's distinctiveness. The "community self-governance system" NFT has created is ushering in this new age of innovative contemporary art (Kushwaha et al., 2022). Digital material works related with NFT must be original to preserve copyright. The first domestic NFT infringement lawsuit, "Fat Tiger Vaccine," hampered the value realization of NFT digital content works. This challenge is how to prohibit users from minting NFTs by duplicating, plagiarizing, or otherwise interfering with others' efforts. The timing of NFT digital material creation and release is crucial to timeliness.

As the information technology industry evolves rapidly, creativity and technological skills are becoming more crucial. Early-minted NFTs are more valuable in this cultural change, as shown by the CryptoPunks initiative, where a single piece cost \$11.8 million. This is because bitcoin values are soaring. Meanwhile, publishing non-fungible token digital works too quickly lowers their inherent value. If NFT releases digital material too quickly, its value may diminish. Digital content providers and communities affiliated with NFT are considered "authority" if they are well-known, knowledgeable, and influential about their subject matter. The "traffic is king" and "fan economy" phenomena have touched every market, but NFTs have left the "creator economy" sector particularly vulnerable. A creator's following increases their potential client base and the number of ways their non-fungible tokens (NFTs) might be valued. Richness emphasizes the creative process and work content. Previous research has demonstrated that richness may enhance knowledge expression. Information content is a key criterion of richness (Daft, 1984). NFT digital content depth depends on narratives, logical arrangement, color harmony, element coordination, and other factors.

Market Demand: Competition, supply and demand, and economic conditions affect the value of every commodity on the market. Due to market speculation, non-financial instruments (NFTs) are particularly vulnerable to regulatory changes and financial sector volatility. Rarity, sociality, liquidity, power scope, and market externalities affect non-financial assets (NFTs), according to the research. When resources or products are scarce, it is called unusual. Feature and asset rarity are used to determine NFT digital content work rarity. The rarity of an asset is a measurement of how unusual something is in general, whereas the rarity of a feature is a measurement of how frequently each feature becomes accessible. Many NFT trading platforms have developed their own rarity detection systems for real-world usage. For instance, "Rarity.Tools" scores things by adding up the inverse of each feature's occurrence, whereas NFTGO uses the Jaccard distance assignment technique to compare items. Sociality is appreciating the social, identity, and spiritual benefits of NFT digital content works.

Today, people buy things for "socializing, self-branding, and self-gratification," and non-fungible tokens (NFTs) are a "symbolic tool" that may boost group cohesion, individual connections, and collective awareness. Non-fiction theory (NFT) may convey a group's aesthetic and emotional resonance. These works represent society and culture. Azuki incorporates Japanese anime culture, Bored Ape depicts existentialism's nihilism, and Cryptopunk portrays the cryptosphere's fundamentalist and punk ethos. All of these works include cryptoculture. However, liquidity is the capacity of non-financial instruments (NFTs) to quickly satisfy holders' capital flow demands. Like non-homogeneous tangible assets like real estate, non-fungible tokens (NFTs) appreciate when the risk of owning them decreases. Collected non-fungible tokens (NFTs) like artworks and avatars are seldom exchanged and may only be sold to the right customers. If this doesn't happen, the seller may have to lower their prices to gain liquidity.

When buying NFT digital content works, asset rights include complete commercial rights, restricted commercial rights, and author-granted rights. All these rights are asset rights. This is the "scope of power" in power structures. Buyers frequently only get non-fungible tokens (NFTs). However, the market typically demands copyright licenses in addition to "ownership" to commercialize digital creations. Example: Azuki. The buyer has complete commercial rights and no constraints on how or when they may make money. Doodles is more limited since it limits revenue and forbids changing the work's substance. Many internal and external market variables may impact the value of non-fungible tokens. These include cryptocurrency indexes, societal norms, and government regulations. Bigger marketplaces frequently subdivide into smaller ones. Numerous empirical studies have revealed that the market for non-fungible tokens (NFTs) and cryptocurrencies, a subset of the former, have substantial synergy.

CONCLUSION

Within the context of the digital music era, this research highlights the ways in which blockchain technology and music non-fungible tokens are altering the manner in which artists may control and profit from their creative outputs. The results of the experts indicate that the decentralized nature of blockchain technology enhances transparency and makes it possible for money to be sent directly to artists by eliminating the need for intermediaries such as record labels, distributors, and agents for the transaction. An economic model that is based on participation is introduced with the incorporation of non-fungible tokens (NFTs). This approach enables artists to generate cash from their work via fan-based ownership, limited-edition releases, and secondary market revenues. However, the study also reveals that this new system is still being held back by a number of factors, including market distrust, technological fragmentation, and legal uncertainties. The deployment of NFT in major music markets is currently hampered by a number of factors, including the absence of uniform ERC standards, the absence of solutions to copyright issues, and the risks involved with speculative trading. The findings, on the other hand, indicate that digital collectibles and tokenized ownership models are gaining popularity as long-term economic tools for the entertainment and arts industries. Moving forward, music non-profit organizations (NFTs) may make access available to a greater number of individuals, provide artists with more control over their work, and establish a more egalitarian economy in which listeners are equal stakeholders in the production of art. In order to make this promise a reality, we need to collaborate in order to enhance regulatory frameworks, standardize blockchain technology, and educate consumers. Therefore, the coming together of blockchain technology with the music business offers a dramatic change in the creation, ownership, and monetization of creative material in the current digital economy.

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